Message

From: Chesnutt.John@epa.gov [Chesnutt.John@epa.gov]
Sent: 11/3/2018 1:45:17 AM
To: LEE, LILY [LEE.LILY@EPA.GOV]
Subject: Re: fixed it - response to Chronicle on Hunters Point

On Nov 2, 2018, at 6:39 PM, LEE, LILY <LEE.LILY@EPA.GOV> wrote:

Hi Cynthia and Jason,

Hope the responses below help clarify the questions raised – we moved quickly to meet your deadline. We do want to express the importance of using site-specific parameters in the PRG Calculator, as opposed to default parameters that do not reflect likely exposures and can provide misleading results.

Q1. Why did the EPA allow the Navy to use the DAC standard instead of the PRGs? The air monitoring that was being used couldn't see anything below 10% of DAC, which is far above the PRG limits for the public. Given that, how can the EPA know that the air concentrations weren't a problem for the public? Is there air data that the EPA reviewed at the time, and calculations that the EPA ran that form the basis for the current assurances the EPA is making about the airborne radioactivity around RSY2? If so, can you provide those?

A1. The Nuclear Regulatory Commission (NRC) uses the Derived Air Concentration (DAC) as a limit for nuclear facilities in which workers have specialized training and multiple forms of protection to work in an environment with potential radiological hazards. These include, for example, wearing dosimeters (monitors that track radiation dose received by an individual over time).

At the Hunters Point Naval Shipyard, workers doing testing and cleanup for potentially radiologically impacted areas also have specialized training and multiple forms of protection to work in an environment with potentially radiological hazards. 10% of the DAC is 10 times more protective than the NRC standard for those radiological workers. The Navy has stated that no radiological workers have reported monitoring results from dosimeters that have ever exceeded any health-based limits. As we explained in our earlier response, at the Hunters Point Naval Shipyard, using 10% of the DAC as a screening level would be consistent with protective screening levels in an EPA Superfund context for the most common alpha and beta sources.

At Superfund sites, EPA also often uses its Preliminary Remediation Goal (PRG) Calculator as another form of screening evaluation. This is primarily done to select cleanup goals so that future workers and residents will not be exposed to long-term risks that exceed the National Contingency Plan regulation levels of 10^-6 to 10^-4 excess cancer risk after cleanup is complete. EPA does not have guidance specifying whether to use the EPA PRG Calculator or the NRC standards for protection of workers doing short-term cleanup activities. Superfund sites nationwide have used either approach.

Q2. Also, you mention, "EPA has used site-specific parameters in the PRG Calculator..." We are confused about the timeline here. When did EPA do this calculation? Was this done at the time to verify the safety of using DAC at this site? Was this done after we inquired about it?

A2. For the protection of workers doing short-term cleanup activities, EPA does not have guidance that specifies whether to use the EPA PRG Calculator or the NRC standards. Superfund sites nationwide have used either approach. However, after you inquired about it, we did an additional check using the PRG Calculator to see how the results compared (see A-3 below).

Q3. And to Jason's point below, what are the site-specific parameters you used and why? And what are the risks you got for specific contaminants? In other words, can you provide us with the actual PRG runs you did with inputs that depart from default, along with detailed explanations of why those decisions were deemed appropriate for this location/the nearby police?

A3. To be more conservative (i.e., protective) than the 'Indoor Worker' scenario and the scenario with radiologically trained and protected worker, EPA ran an "Outdoor Worker" Air scenario. According to the User's Guide, "This is a long-term receptor exposed during the work day who is a full-time employee working on-site and who spends most of the workday conducting maintenance activities outdoors." For Building 606 police staff who are mostly working indoors, the risk would be less than for an outdoor worker, who might be directly exposed to dust at the location she or he is working.

Outdoor worker scenario: The 2010 *Dust Control Plan* shows 10% of the DAC as the standards for three Radionuclides of Concern (ROCs) Ra-226, Cs-137, Sr-90. These were the most widely used radionuclides at the Hunters Point Naval Shipyard site and been the most commonly found radionuclides during testing and cleanup. Ra-226 comprises over 90% of the ROCs. We ran the EPA PRG Calculator risk estimate for an 'Outdoor Worker' air scenario and assumed the following:

- 4 years – the expected time frame for completing field work for a specific section of the site, under a single contract, with specific associated workers.
- 40 days per year – 6 weeks was often needed to process a single load of soil on an RSY pad. For that single load, scanning and sampling typically took 4 hours. Then before that load could be moved, the process required 3 weeks for radionuclides in soil samples to come into equilibrium. After that, the lab needed to do analysis, which would be sent for Navy technical review and approval. That process usually took a minimum of 6 weeks, but some times more. During a typical year, a single RSY pad might go through this process 8 times. This would mean 4 hours X 8 loads = 32 hours per year. Close to Building 606, possibly up to 10 RSY pads might have been processing soil simultaneously. 32 hours per year per pad X 10 pads = 320 hours per year. At 8 hours per day, the total days per year would be 320 hours divided by 8 hours = 40 days per year.
- 0.12 hours per day – Dust is generated when the wind blows over 15 miles/hr. Wind data collected over 70 years nearby shows that the wind blows above 13 miles/hour approximately 30% of the time. 8 hours X 30% = 2.4 hours per day. Dust control plans require a standard of "no visible dust" and various measures, such as the requirement to stop work at windspeeds above 25 mph winds and wetting of soil. Dust control measures have been demonstrated to significantly reduce dust. In addition, the wind blows primarily across RSY 2 in the opposite direction from Building 606. Due to these considerations, we estimate actual exposure to dust to occur 5% of the work day when the wind speed exceeds 15 miles per hour. 2.4 hours per day X 5% = .12 hours/day exposure.

These site-specific parameters lead to a risk estimate of 3.2 X 10^-5 for Cs-137, 8.5 X 10^-5 for Ra-226, and 4.2 X 10^-6 for Sr-90. These are within the National Contingency Plan (NCP) risk range of 10^-6 to 10^-4 used at Superfund sites.

On October 23, you provided a snapshot of air data with alpha and beta results, which appear to show 8-hour accumulation. The difference between the monitoring results upwind (baseline) and the downwind represents contamination that could have blown from the worksite. We took the highest difference between the downwind and upwind monitoring results and used the EPA PRG Calculator to

estimate a risk of 2 X 10^-7 for alpha and beta combined. We assumed 100% alpha activity came from Ra-226 (which is a more protective assumption). For beta activity, we assumed that half came from Sr-90 and half from Cs-137. Again, this calculated risk is within the NCP risk range.